AMENDMENTS TO THE CLAIMS:

Please cancel Claims 1, 3-6, 11 and 12, and amend Claims 2, 7 and 8, as follows:

1. (Cancelled)

2. (Currently Amended) An image pickup apparatus ~~according to Claim 1~~ comprising:

an image pickup unit having an array of a plurality of photodetection elements;

a light-emitting element unit for emitting reference light having a predetermined frequency;

a wave synthesizer for synthesizing image light from an object and the reference light from said light-emitting element unit, and for guiding the synthesized light to said image pickup unit; and

a filter for extracting a difference frequency between a frequency of the light from the object and said frequency of the reference light, from outputs of said plurality of photodetection elements of said image pickup unit,

wherein said light-emitting element unit changes said predetermined frequency of the reference light in accordance with said difference frequency extracted by said filter, so that said difference frequency becomes 0.

3-6. (Cancelled)

7. (Currently Amended) An image pickup apparatus ~~according to claim 1, further~~ comprising:

an image pickup unit having an array of a plurality of photodetection elements;

a microlens array provided for each of the photodetection elements;

a light-emitting element unit for emitting reference light having a predetermined frequency;

a wave synthesizer for synthesizing image light from an object and the reference light from said light-emitting element unit, and for guiding the synthesized light to said image pickup unit; and

a filter for extracting a difference frequency between a frequency of the light from the object and said frequency of the reference light, from outputs of said plurality of photodetection elements of said image pickup unit,

wherein said light-emitting element unit changes said predetermined frequency of the reference light in accordance with said difference frequency extracted by said filter.

8. (Currently Amended) An image pickup apparatus ~~according to claim 1,~~ comprising:

an image pickup unit having an array of a plurality of photodetection elements;

a light-emitting element unit for emitting reference light having a predetermined frequency;

a wave synthesizer for synthesizing image light from an object and the reference light from said light-emitting element unit, and for guiding the synthesized light to said image pickup unit, wherein said wave synthesizer comprises a light waveguide provided for each of the photodetection elements; and

a filter for extracting a difference frequency between a frequency of the light from the object and said frequency of the reference light, from outputs of said plurality of photodetection elements of said image pickup unit, wherein said light-emitting element unit changes said predetermined frequency of the reference light in accordance with said difference frequency extracted by said filter.

9-12. (Cancelled)